

# EFFECTS OF ADVERTISED PRICING ON BRAND IMAGE FOR AN ON-LINE RETAILER

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## Abstract

This study presents a conceptual framework on price endings and their effects on brand image and perceived quality and empirically tests several of the proposed relationships by using an experimental design. This research extends the work of Schindler and Kibarian (2001) who studied the use of 99 and 00-price endings as an important communication variable. The factorial design used a combination of price endings and perceived quality of the retailer as treatments to test three behavioural outcome variables: price image, quality image of the products and quality image of the retailer. Respondents viewed a simulated experimental webpage and provided feedback via an on-line survey entered through a point and click interface. This study contributes to the increasingly growing body of research on price endings and quality perceptions. It provides insights on the way subjects respond to price as a way of expressing quality image perceptions. In contrast to prior literature, the results suggest that respondents have a more favourable attitude towards 99-price endings. However, for a higher quality retailer the price difference may not be as important. Naipaul and Parsa (2001) found that respondents use 99-price endings as a cue for value, which suggests that adopting a specific pricing strategy does generate some key communication outcomes for a brand or retailer. Implications of these findings are reviewed and discussed.

## Introduction

Businesses operating at the high end of a given market (food service, home furnishings) frequently used the digit 0 as the rightmost digit in their prices (e.g. \$5.00, \$ 60.00). By contrast, those functioning in the low end of the same market generally used the number 9 (e.g. \$5.99, \$99.99) (Naipaul and Parsa 2001). Using particular price endings could be associated with a particular retail outlet which enhances the retailers' distinctiveness in the minds of the consumer.

The use of odd-ending pricing is exceedingly common, for example, \$29.99 rather than \$30.00, due to the rationale that it creates greater than expected demand of these prices as advertisers utilising 99-endings has shown significant increase in sales (Kalyanam and Shively 1998 as cited in Schindler and Kibarian 2001; Schindler and Kirbrian 1996); however little research has investigated how this process occurs. Price image effects of 99-endings such as the advertised price is relatively low and as representing a discount, it additionally has negative effects on the quality image in the advertisements of high quality retailers (Schindler and Kibarian 1996). A significant amount of research has been conducted on pricing strategies involving the use of odd-ending prices. Several theories have been proposed why the increased demand for the products might exist. One of these theories is image effects. These are those that "...cause the consumer to believe something about the product, store or competition on the basis of the right-hand digits of the price" (Stiving and Winer 1997, p. 58). Coulter (2001) suggests that there are two types of common image effects proposed in literature:

1. The "price-image effect" (i.e. consumers view nine-ending prices as a signal of a price discount;
2. The "quality image effect" (i.e. consumers view nine-ending prices as a signal of inferior quality (Schindler 1991; Gedenk and Sattler 1999; as cited in Coutler 2001).

There has been little empirical support to substantiate the existence of quality image effects (Schindler and Kibarian 1993). Therefore, this research aims to use price endings indicated on specific merchandise to determine consumer's perceptions of retail store quality. It continues on the work of Schindler and Kibarian (2001) who

studied the use of price endings to access if the choice of right most digits has an important impression on price image and quality image. Their results showed that a 99-ending increased the likelihood that the respondents viewed the price as relatively low and as representing a discount with negative effects being recorded for 99 price endings in the advertisements sponsored by high quality retailers. The purpose of this research is to examine the impact of adopting a single-minded pricing strategy that will be communicated throughout a retailer's advertisements and to measure the effects on the perceived brand image of an on-line retail store. Our research investigates the impact of a communication strategy using odd or even number price endings. It further investigates the influence of retailer quality to convey distinct information about the retailer's products and how consumers interpret and respond to that information using perceptions of price and quality image in an on-line retail setting.

## **Literature Review**

### ***Price Image Effects***

The widespread use of odd pricing has attracted increasing attention from the researcher. One explanation that is given is that consumers see the odd price as being cheaper than it really is compared to the nearest round figure (Holdershaw, Gendall, and Garland 1997). Consumers may perceptually underestimate the level of 99-ending prices as they may pay less attention, or even omit a prices right most digits (Schindler 1993). For instance, customers see a price of \$6.99 as being closer to \$6.00 than nearly \$7.00. Boyd and Massey (1972) suggest that this fabricated impression enhances buyer's response. A rationale given for this is that people only have limited capacity for storing information. As consumers are exposed to continuous information on price they only store the most valuable message which they perceive as the first digits of a number (Brenner and Brenner 1982). For example, consumers will recall that the price is \$6.00, or possibly \$6.90, but rarely exactly \$6.99. The explanation offered for not rounding up to \$7.00 is the additional processing time as it involves an extra decision compared with storing the first decision (Brenner and Brenner 1982).

Bergen, Kauffman, and Dongwon (2004) argue that it may be rational for consumers to be inattentive to the rightmost digits because of the increasing amounts of information consumer's face, which is costly and hard to process, but they are also constrained by time, resources and information processing constraints. This creates an incentive for firms to make these prices as high as possible. Alternatively consumers can be conditioned from how price endings are used in the market place as 99-ending prices tend to be used more often for prices on sale (Schindler and Kibarian 1996) and are frequently used by low price retailers than higher priced retailers (Stiving 2000).

It has been proposed that the 99-ending communicates a low price image, that is; a price image favourable to the seller that involves an impression that the price is relatively low. It has been proposed that the 99-ending might actually be perceived as lower prices therefore communicating a low price image (Bliss 1952; Kotler 2000; Morris and Morris 1992). They can also lead to higher sales for 99-ending prices than other prices (Schindler 1993).

The theory behind price image effects is that customers make competitive attributions based on the right most digits of a price. Past research conducted communicating the 99-ending indicates that these attributions might involve the notion; that the price is on sale (Quigley and Notarantonio 1992); that the price has been reduced (Schindler 1996; Alpert 1971; that this is the lowest price available (Harper 1966; Manson and Mayer 1990; Schindler 1996); and price ending affects the impression created by an advertisement. The 99-ending increases the likelihood that viewers judge as advertised price as relatively low and as representing a discount Schindler and Kibarian 1993.

### ***Quality-Image Effects***

Research has examined store image as a criterion variable (Doyle and Fenwick 1975) or as a dependent measure (Ohanian and Tashchian 1992; Baker, Grewal, and Parasuraman 1994), others have observed its interactive effects (Thoelli, Lim, and Ye 1989; Gupta and Cooper 1992; as cited in Chowdhury, Reardon, and Srivastava 1998). Store Image Quality Theory explains how the image effects transmit signals that enable consumers to infer something in terms of the image created about a product or store based on the last digits of price (Bergen et al. 2004). Store image is believed to have tangible and significant managerial relevance, especially with regard to its impact on profitability (Mitchell 1993; cited Chowdhury et al. 1998).

Consumers have difficulty observing quality of products in the traditional market at the point of purchase because they are lacking perfect information regarding the product or store features (Stiglitz 1987). Rao and Monroe

(1985) observed that consumers might use prices as a cue for assessing quality. Researchers have found that odd prices are a sign of low quality products or low quality stores; whereas even prices indicate high quality, products or high quality stores (Striving and Winer 1997; Nagle 1987; as cited in Schindler and Kibarian 2001). As a result, a negative impression of a store's or a products quality might occur because of low price image associated with 99 price endings (Schindler and Kibarian 2001). Research carried out by Striving (2000) on price endings in twelve department stores, found that retailers with a classy image are among the most likely to use prices that end in "0". Classy department stores avoid using prices that end with a "9" to avoid the impression of lower quality. In general, high quality stores tend to have a higher product quality, service levels, product assortment and support (Bergen et al. 2004). This is argued to have lead to higher prices for such retail stores.

There has been much research conducted on round prices as a signal of high quality however, there has been little empirical support to demonstrate this nor theoretical explanation for how price-endings may signal quality. Explanation exists for how price can signal quality (Bagwell and Riordan 1991) how advertising can signal quality (Migrom and Roberts 1986) and how money back guarantees can signal quality (Moorthy and Srinivasan 1995; as cited Striving 2000). Striving (2000) argues that it is difficult to accept how using a round price figure, which is presumably a signal of quality, is more costly to the low quality firm than the high quality firm. Striving's (2000) research concluded that although many researchers have put forward that round prices are a signal of quality, when firms use price to signal quality, the high-quality firms are likely to set those prices at round numbers. Striving's (2000) model showed firms that are not signalling quality are likely to use just-below prices. Kruel (1982) suggested that just-below price endings carry connotations of low quality (as cited in Schindler 1991). Consumers may believe that low or discounted prices equal leftover or out of date goods that are of low quality or ascribe features of a product that are normally used to judge similar products in that category. Consumers may believe that retailers using just-below pricing for goods that are not on sale are associating low quality connotations to these prices which may influence consumer expectations about the quality of all the items available in that particular retail store. Nagle (1987) suggests that by utilising round-number endings store may give consumers the impression that all items in the store are of high quality (as cited in Schindler 1991).

Spohn and Allen (1977) hypothesized that price with round-number endings contribute to giving a store or product an image of classiness (Wingate, Schaller, and Miller 1972), sophistication (Raphel 1968), prestige (Alpert 1971) or a touch of dignity (Feinberg 1962) (as cited in Schindler 1991). Schindler (1991) suggests that attributes such as the above maybe communicated in prices under \$100 by leaving out the cents digits completely. Leaving out the last digits can also cause consumers to infer something about a store, i.e. the type of consumer who shops there and this can create a high price image. One of the theoretical foundations of store image reviewed consisted of on-line store image from authors van der Heijden and Verhagen (2002). Consumers view stores in terms of their dimensions, which collectively make up the store image. It was important to consider the various store dimensions for this research, as it comprises of perceived quality of the retail outlet and the merchandise it carries. Van der Heijden and Verhagen (2002) found that store image functions as an important dependent variable. The study focused largely on on-line store perceptions, with an intention to purchase on-line and respondent attitudes. The results indicated that store image related factors could only explain a slight percentage of the attitude towards purchasing on-line. It was argued that additional research is necessary for a clearer relationship to be established between the dependent variable store image and constructs of store familiarity and store style. Bergen et al. (2004) suggest that on-line consumers care about other non-price aspects, such as seller reputation, delivery locations and times, contract lengths and so forth that revolve more around the retailer's image or reputation. Ongoing research based on store image has contributed to an advancement of knowledge on the store image construct.

### ***Development of Hypotheses***

It has been proposed that the 99-ending communicates a low price image (Bliss 1952; Kotler 2000; Morris and Morris 1992). By integrating the findings of the previous research, a number of crucial hypotheses are proposed. Given that the 99-ending appears to convey a low-price image to consumers, it is reasonable to anticipate that 99-ending prices may in fact be perceived as being actually lower prices overall for a retailer (as opposed specific items only within a store). Consumers give less attention to and drop off the rightmost digit and undervalue the level of a 99-ending price (Schindler and Kibarian 1993). This leads to our specific hypotheses regarding a favourable price image based on research by Schindler and Kibarian (2001). We accordingly propose that:

- H1. When an advertised price is expressed with a 99-ending rather than a 00-ending, it is more likely to give the impression that the price
  - (a) Cannot be found at a lower price elsewhere

- (b) Is a discount or sale price
- (c) Has not recently been increased

The 99-ending also may correspond to a negative impression describing the quality of items (Alpert 1971; Krueger 1982; Nagle and Holden 1995; cited in Schindler and Kibarian 2001). A negative impression of the store and merchandise quality aspects may occur in consumer's minds due to the consequence of the 99-endings on goods giving a low quality price image. This leads to our specific hypotheses regarding an unfavourable quality image based on previous research by Schindler and Kibarian (2001). We hence hypothesize that:

H2. When an advertised price is expressed with a 99-ending rather than a 00-ending, it is more than likely to give the impression that:

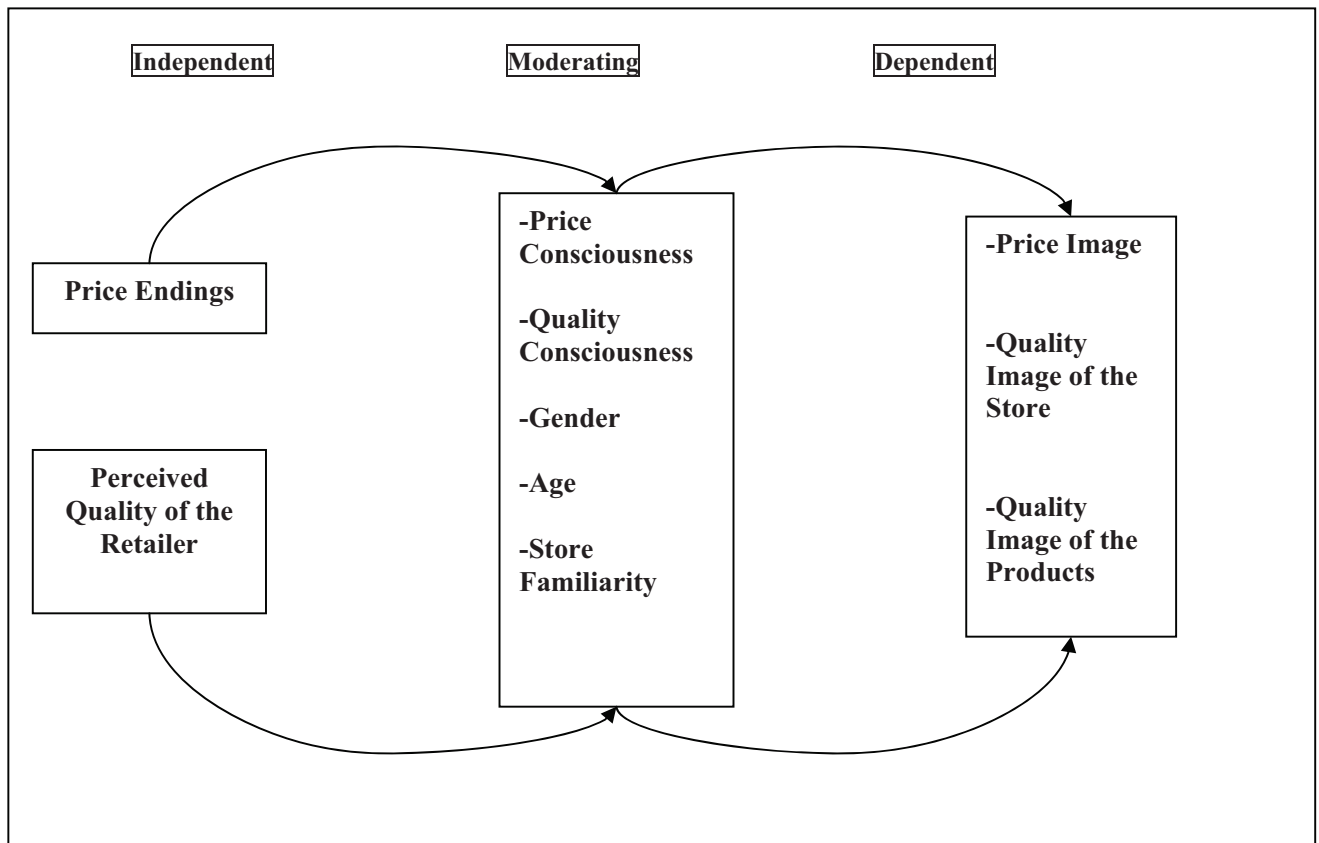
- (a) The advertised item is of low quality
- (b) The quality of most of the items is generally of low quality
- (c) From the impression of the products, the department store is not an upmarket retailer.

Upmarket department stores avoid utilizing prices that end with a "9" to avoid the effect of lower quality perceptions. In general, higher quality stores are inclined to have a higher product quality, service levels, product assortment and support (Bergen et al. 2004; Schindler and Kibarian 2001). Therefore, it is posited that:

H3. When an advertised price is expressed with a 99 ending, the perceived quality of the retailer overall will be lower than if using 00 end points.

## Conceptual Framework

**Figure 1** portrays our conceptual framework involving the independent variables, moderating variables and dependent variables and the flow of relationships between each.



## Method

### *Experimental Design*

The research conducted was a between subject experimental design. The two independent variables used were price endings (00-ending and 99-ending) and quality of the retailers (high and low). The study was organised as a two-by-two factorial design:

	Price Ending	
	00	99
Quality of the retailer		
Low-“Kmart”		
High-“Ballantynes”		

### *Pre-Test*

A pre-test from a convenience sample of 30 undergraduate students of the five main department stores in a mid-sized city was used to identify stores that most fitted this criterion. Students were asked to rate their perceived quality of each store on a five-point scale from 1 – low quality to 5 – high quality. The stores selected have the highest and lowest means respectively. The retail stores chosen were Ballantynes for the high quality store (4.9) and Kmart for the low quality store (1.57). We also checked for internal consistency to make sure that the stores never crossed over in consumer’s minds. Both the chosen stores had the lowest variation and the lowest ranges respectively.

### Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Farmers	30	3	1	4	3.07	.740
Kmart	30	2	1	3	1.57	.679
The Warehouse	30	3	1	4	2.27	.740
Arthur Barnett Ltd	30	2	3	5	4.13	.730
Ballantynes	30	1	4	5	4.90	.305
Valid N (listwise)	30					

### *Stimulus Material*

The stimuli material was an on-line retail site for each of the department stores. The format was downloaded from an existing site into Microsoft FrontPage to ensure a professional image was maintained for the on-line site. The web site consisted of four web pages for the Home and Garden section of the department stores. Each page includes a sub-category which are Kitchenware; Living; Outdoor Living; Bed and Bath. Each webpage included the retail stores logo, the standard tool bar, nine photographs of products relevant to each category, a brief description of the product (any brand names or any other distinguishing features to the products were omitted to make them generic) and the prices. Only the retail store logo and price ending were manipulated in each treatment to

ensure consistency. The products chosen for display on the Web sites aimed at being as representative as possible of the department store shown and price averages were calculated for each item using actual retail store prices. The following cover story was told to each of the respondents on the instruction page preceding the experiment to disguise the purpose of the study.

*“The following Web pages have been designed as part of a refurbishment for the home and garden department of a store. To aid in the renovations the company have asked for customer input. They would like to know how you perceive the store and the advertised products”.*

### **Procedure**

Participants were recruited randomly via an email on the University’s database of undergraduate students. The experiment had a sample size of 140 randomly assigned to each of the four different treatment conditions. There were 81 male respondents and 57 female respondents. The number of respondents in each cell is indicated below

Ballantynes/ 00-price ending	48
Ballantynes / 99-price ending	36
Kmart / 00-price ending	32
Kmart / 99-price ending	31

As an incentive all students went into the draw to win one of ten \$20 cell phone pre-paid cards. The collection of data was through an on-line questionnaire with a point and click interface. After the subjects finished viewing the web sites, they completed an on-line questionnaire containing the measures of their responses to the displayed products and prices on the Web site. They could not refer back to the advertisements on the Web site when responding to the questions.

### **Instruments**

The measures for the dependent variables were adapted from previous price and quality studies and sourced from Schindler and Kibarian (2001). The independent variables included price endings of 99 and 00 and the perceived quality of the retailer, Ballantynes as the high and Kmart as low quality retailer.

The dependent variables included price image, quality image of the products. The price image was measured on a five point scale (definitely yes- definitely no). The questions were sourced from research conducted by Schindler and Kibarian (2001). The price image of the products questions were as follows:

*Do you think you could find these products advertised at a lower price? (H1a)*

*Do you think the products advertised are at a sale price? (H1b)*

*Stores sometimes increase prices. Do you think these advertised prices are ones, which have been recently increased? (H1c).*

The quality of products was measured on a five-point scale (clearly above average- clearly below average). These questions were again founded on research conducted by Schindler and Kibarian (2001). The three-quality image of the products questions based on overall impressions of the products advertised were as follows:

*How would you rate the quality of the advertised items? (H2a).*

*What do you think the quality is of most of the products sole in the store? (H2b)*

*In your opinion, the store is (very classy; rather classy; a bit classy; not at all classy) (H2c).*

Store quality image of the retailer was measured on a seven point semantic differential scale (bad-good, dislike-like, poor quality-high quality, unsatisfactory-satisfactory, unfavourable-favourable, negative-positive) following the question, “From viewing the Web site what is your opinion of the store?” This was sourced from Dickson’s and Albaum (1997) Retail Store Image – Consumer Retail Store Image CIRS scale. This scale was used to measure respondents’ perceived attitudes towards the quality of the store. This question helped to answer H3. The reported Cronbach alpha for this scale is .91.

The moderating variables included quality consciousness, price consciousness, gender and age. Subjects’ quality consciousness was operationalised when asking for their opinions of themselves on a five-point scale



(strongly agree – strongly disagree). The questions were sourced from Sproles and Kendall 1986; Sproles and Sproles 1990 Shopping Styles: Consumers Styles Inventory scale. They were two items from a Perfectionist/High Quality Conscious scale. The reported Cronbach alpha is .74. These questions were as follows:

*Getting good quality is very important.*  
*I make a special effort to choose the very best quality products.*

Subjects' price consciousness was operationalised on a five point scale (strongly agree - strongly disagree). The questions were sourced from Lichtenstein, Ridgway and Netemeyer (1993) Price Perception Scales. They were two items from a price consciousness scale. The reported Cronbach alpha for their scale ranged from .78 - .90. These questions were as follows:

*I am not willing to go to extra effort to find lower prices.*  
*The money saved by finding lower prices is usually not worth the time and effort.*

Subject demographic characteristics such as age, gender and income was required to provide a means for checking potential biases in responses and to act as moderating variables. Secondary information of store familiarity was also collected to act as a moderating variable.

## Results

The main objective of this research was to study the individual and interactive effects of price endings and quality of retail stores on price image and quality image. The data was primarily examined visually followed by the calculation of descriptive statistics. Bi-polar items were transformed to ensure all the data was correctly polarised. This included frequencies, means and standard deviation. Histograms were plotted to analyses the distribution of each variable checking for normal distribution. Skewness and Kurtosis acceptable ranges were from -2 to 2. One of the moderating variables; income, was the only one outside of this acceptable range. This could be easily explained through the sample which was undergraduate students. Transformation could not bring this variable within an acceptable range therefore was omitted from any further results.

To check the reliability of the scales, Cronbach alphas were calculated. The alpha for the dependent variable store image was .94. The moderating variables were price consciousness, .75 and the quality consciousness scale alpha was .78. The removal of items was not required as there was no striking increase in the alphas if items were removed. The scales were then computed and the data was examined again, which included means and standard deviation. Histograms were plotted to analyse the distribution of each scale ensuring normal distribution. Skewness and Kurtosis acceptable ranges were from -2 to 2 so no data transformation was required.

The final step was to conduct a univariate analysis on each dependent variable. The first effect measured was the independent variables price ending and quality of the retailer on the dependent variable price image. These results are shown in Table 1. The first test was measuring if the respondents thought that they could find the 'products at lower prices elsewhere'. The analysis showed a significant moderate mean effect of quality (Sig. = 0.000,  $\epsilon^2$  = 0.093). ANOVA was then run with the covariates to see if there was any significant effect. Results showed a significant small mean effect of gender (Sig. = 0.014,  $\epsilon^2$  = 0.046). Gender was rerun as a fixed factor however it indicated no alternative mean effects or significant interaction on 'lower price else where' price image variable.

The next price image variable was if the respondents had the impression that the prices were discounted or on sale. No significant mean effect or interaction was found. The last price image variable was whether the prices gave the impression that the prices had 'not been recently increased'. No significant mean effect or interaction was found.

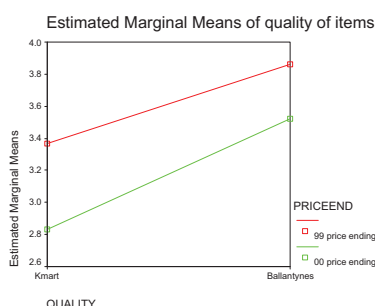
**Table 1.** ANOVA Results for Price Image

Source of variation	F value, df=1	Sig.	Effect Size - $\epsilon^2$	F value, df=1	Sig.	Effect Size - $\epsilon^2$	F value, df=1	Sig.	Effect Size - $\epsilon^2$
Dependent Variable	'can not be found at a			'is a discount or sale			'has not been recently		

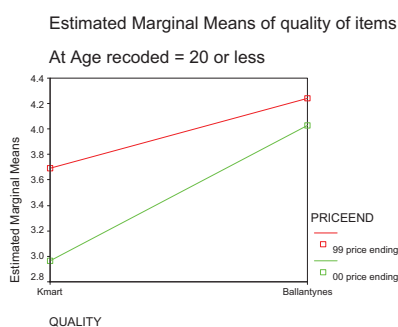
	lower price else where'			price'			increased'		
Main effects									
Quality	14.013	.000	.093	.475	.492	.003	1.035	.311	.008
Price endings	.166	.684	.001	.326	.569	.002	1.957	.164	.014
Quality (with covariates)	13.368	.000	.093	.279	.595	.002	.169	.681	.001
Price endings (with covariates)	.007	.932	.000	.160	.689	.001	2.718	.102	.020
Interaction effects									
Quality*Price ending	.918	.340	.007	.948	.332	.007	.285	.594	.002
Quality*Price ending (with covariates)	.738	.392	.006	.160	.689	.001	.026	.871	.000
Covariates									
Age	1.332	.251	.010	6.736	.011	.049	1.660	.200	.013
Gender	6.267	.014	.046	.060	.808	.000	3.930	.050	.029
Price Consciousness	.065	.800	.000	6.375	.013	.046	4.092	.045	.030
Quality Consciousness	.989	.322	.007	.122	.727	.001	.169	.006	.001
Store Familiarity	3.700	.057	.027	1.198	.276	.009	6.889	.010	.050

The next effect measured was the independent variables price ending and quality of the retailer on the dependent variable quality image of the products. The first test was measuring if the respondents thought that the advertised item is of low quality. The results showed a small mean effect of quality (Sig. = 0.004,  $\epsilon^2$  = 0.059). The respondents are more favourable towards the quality of the items with a 99 price ending than a 00-price ending at both stores. The respondents were more favourable towards the quality of the items at the higher quality store, Ballantynes than at Kmart. ANOVA was then run with the covariates to see if there were any significant mean effects or interactions. Results showed a significant moderate mean effect of quality (Sig. = 0.004,  $\epsilon^2$  = 0.063), significant small mean effect of familiarity with the store mean effect (Sig. = 0.030,  $\epsilon^2$  = 0.035) and a significant moderate mean effect of age (Sig. = 0.003,  $\epsilon^2$  = 0.064) (for a visual representation see Figure 1). The results suggest that the perceived quality of the items is lower for a 00-price ending than a 99-price ending. Age was then recoded into two groups; those respondents aged 20 and under and those 21 and over (agerec). These segments were determined by the mean and the distribution. The ANOVA was then rerun with the recoded age as a fixed factor. Familiarity of the store was left as a covariate. The results are shown in Table 2. The results indicated a mean effect of both the independent variables, quality had a moderate mean effect of quality (Sig. = 0.02,  $\epsilon^2$  = 0.068) and price ending which had a small mean effect (Sig. = 0.019,  $\epsilon^2$  = 0.041).

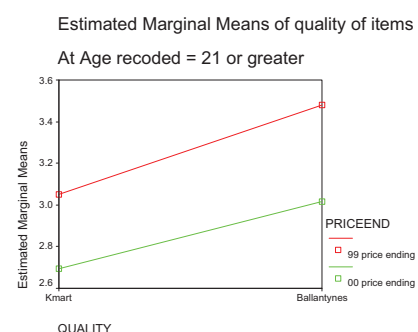
**Figure 1**



**Figure 2**



**Figure 3**



The results suggest that for respondents 20 years or less they are more favourable towards the quality of the items for 99-price ending than 00-price endings at a low quality retailer however they appear less concerned over



price endings for a high quality retailer. Respondents 21 years and above appear to be more favourable towards the quality of the products if they are a 99-price ending than 00-price ending at both low and high quality retailers. The second test of quality image of the products measured if the respondents thought that the quality of most of the items advertised was low. The results showed a large mean effect of quality (Sig. = 0.000,  $\epsilon^2$  = .119). ANOVA was then run with the covariates to see if there was any significant effect. No other significant variables or interactions were found. The third test of quality image of the products measured the respondent's impressions of the retail store from viewing the products. The results showed a large mean effect of quality (Sig. = 0.000,  $\epsilon^2$  = .242). ANOVA was then run with the covariates to see if there was any significant effect. No other significant variables or interactions were found.

**Table 2.** ANOVA Results for Quality Image of the Products

Source of variation	F value, df=1	Sig.	Effect Size - ε2	F value, df=1	Sig.	Effect Size - ε2	F value, df=1	Sig.	Effect Size - ε2
Dependent Variable	The advertised items are of low quality			The quality of most of the items is generally of low quality			From the impression of the products, the department store is not an upmarket retailer		
Main effects									
Quality	8.461	.004	.059	18.341	.000	.119	43.466	.000	.242
Price endings	2.526	.114	.018	.431	.512	.003	2.226	.138	.016
Quality (with covariates)	8.793	.004	.063	16.981	.000	.115	47.500	.000	.266
Price endings (with covariates)	3.522	.063	.026	.578	.448	.115	1.492	.224	.011
Quality (with age fixed factor)	9.589	.002	.068						
Price endings (with age fixed factor)	5.617	.019	.041						
Interaction effects									
Quality*Price ending	2.526	.114	.018	.251	.617	.002	2.019	.158	.015
Quality*Price ending (with covariates)	.172	.679	.001	.578	.448	.001	1.613	.206	.012
Quality*Price ending* age (recoded) (with store familiarity as covariate)	.707	.402	.005						
Covariates									
Age	8.932	.003	.064	2.178	.142	.016	.184	.669	.001
Gender	.144	.705	.001	.005	.941	.000	1.164	.283	.009
Price Consciousness	2.866	.093	.021	1.509	.222	.011	.100	.752	.001
Quality Consciousness	.065	.799	.000	.231	.632	.002	.027	.869	.000
Store Familiarity	4.808	.030	.035	1.412	.237	.011	2.780	.098	.021

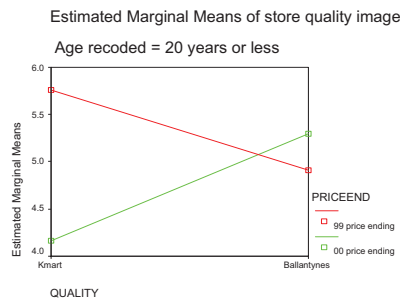
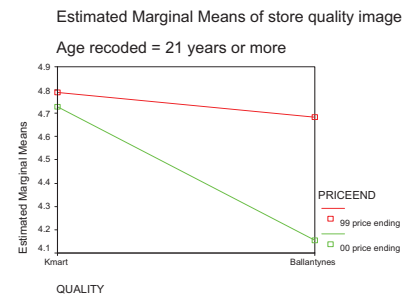
The next effect measured was the independent variables price ending and quality of the retailer on the dependent variable quality image of the stores. Results indicated no mean effect or interaction of the independent variables. When the covariates were added into the ANOVA the interaction between quality and price ending was nearing significance (sig = 0.61,  $\epsilon^2$  = 0.027) with the significant age moderating variable (sig = 0.033,  $\epsilon^2$  = 0.034). The recoded age variable was then entered as a fixed factor. The results are shown below in table three. Results indicate a significant small mean effect of price ending (sig = 0.022,  $\epsilon^2$  = 0.039). The interaction between quality and price ending was almost at a significant level at (sig = 0.53,  $\epsilon^2$  = 0.028). The interaction between price, quality and age (recoded) has a moderate significant interaction (sig = 0.002,  $\epsilon^2$  = 0.070).

**Table 3.** ANOVA Results for Quality Image of Store**Tests of Between-Subjects Effects**

Dependent Variable: OPINIONQ

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	30.494 <sup>a</sup>	7	4.356	3.572	.001	.159
Intercept	2994.435	1	2994.435	2455.283	.000	.949
QUALITY	.326	1	.326	.268	.606	.002
PRICEEND	6.562	1	6.562	5.381	.022	.039
AGEREC	6.290	1	6.290	5.158	.025	.038
QUALITY * PRICEEND	4.651	1	4.651	3.813	.053	.028
QUALITY * AGEREC	1.848	1	1.848	1.515	.221	.011
PRICEEND * AGEREC	.780	1	.780	.640	.425	.005
QUALITY * PRICEEND * AGEREC	12.148	1	12.148	9.960	.002	.070
Error	160.986	132	1.220			
Total	3415.160	140				
Corrected Total	191.480	139				

a. R Squared = .159 (Adjusted R Squared = .115)

**Figure 4****Figure 5****Figure 6**

Results indicate for a low quality retailer (such as Kmart) that respondents are more favourable for the quality image of a 99-price ending however for a high quality retailer there is less differentiation for the price endings though they are slightly more favourable towards the 99-price ending (for a visual representation see Figure 4). There was a significant moderate interaction between quality, price ending and age (recoded) ( $\text{sig} = 0.002$ ,  $\epsilon^2 = 0.070$ ) (see Figures 5 and 6 for a visual representation). For respondents 20 years and less they seem to be more favourable towards the quality image of the store for low quality retail stores with 99-price endings and for high quality retailers they have a more favourable image if the price ending is 00. For respondents who are 21 years and greater there is little difference between quality images of the low quality retail stores, in contrast they are more favourable towards a high quality retail stores quality image with price endings of 99. Therefore if a high quality retailer like Ballantynes uses a 00-price ending the respondents are less favourable toward the store image.

## Discussion

The experiment was conducted in an on-line environment whereas previous research focused predominantly on non-on-line experiments; therefore this research contributes considerably to current research on price ending and their relative associated images in this new setting. The study attempted to gauge the impact of adopting a consistent price communication strategy for all products advertised on an on-line storefront.

In summary of the results, H1 stated that when an advertised price is expressed with a 99-ending rather than a 00-ending, it is more likely to give the impression that the price

(a) Cannot be found at a lower price elsewhere - H1a is not supported. A significant moderate mean effect of quality with no interaction was found. This is in contrast to Schindler and Kibarian (2001) who found significant support for advertised prices with 99-endings the subjects were more likely to judge that they would be not able to find the item at a lower price when the price was expressed with a 99-ending.

(b) Is a discount or sale price - H1b is not supported. No significant mean effect was found and no interaction was found. This is in contrast to Schindler and Kibarian (2001) who found significant support for advertised prices with 99-endings the subjects were more likely to judge that the advertised price was a sale price when the price was expressed with a 99-ending.

(c) Has not recently been increased - H1c is not supported. No significant mean effect was found and no interaction was found. In contrast Schindler and Kibarian (2001) found support for advertised prices with 99-endings. The subjects had a tendency to judge that the advertised price was recently been increased when the price was expressed with a 99-ending.

H2 stated when an advertised price is expressed with a 99-ending rather than a 00-ending, it is more than likely to give the impression that products are:

(a) The advertised items are of low quality - H2a is not supported. A significant small mean effect of quality and no interaction was found. The results indicated a significant moderate mean effect of age therefore age was recoded and run as a fixed factor. This showed significant mean effects of quality and price endings. It showed that respondents are more favourable towards the quality of the products with 99-endings than a 00-price ending. This is in contrast to literature that suggests that the 99-ending may correspond to an adverse impression describing the quality of items (Alpert 1971; Krueger 1982; Nagle and Holden 1995; cited in Schindler and Kibarian 2001). A possible explanation is that the respondents are all students therefore may be more conscious of value. Naipaul and Parsa (2001) in a study of restaurants investigated the extent to which restaurant marketers use the price endings 00 and 99 to communicate quality and value images, and whether consumers use those price endings as information cues when choosing where to dine out. The experimental data shows that marketers probably rely on price cues and that consumers use those cues. The results of the study show how marketers can and do use prices to inform consumers about the quality and value of their products. In turn, consumers recognise the cues being communicated by the prices, and will use that information to make decisions about buying the product. This research suggests that respondents use 99-ending as a cue for value.

(b) The quality of most of the items is generally of low quality - H2b is not supported. A significant small mean effect of quality, no interaction was found.

(c) From the impression of the products, the department store is not an upmarket retailer - H2c is not supported. A significant large mean effect of quality, no interaction was found.

This is also similar to the work of Schindler and Kibarian (2001) who found a consistent but not significant trend in the data indicating that each of the questions showed pronounced trends in the hypothesised direction. It is realistic that the perceived quality of a retailer might moderate the effect of price ending on quality image (Schindler and Kibarian 2001). The reputation of the department stores may have had a significant effect on consumer perceptions of price and quality image. This could explain the mean effects of quality on the dependent variables, such as H1a, H2a, H2b and H2c.

H3 stated that when an advertised price is expressed with a 99-ending the perceived quality of the retailer is lower. The results found no support for this hypothesis. The results did however suggest that for an increased quality retailer the price ending is not as important for store quality image. For a low quality retailer the 99-price ending gives a more favourable store quality image. Age as a moderating variable was found to be significant. When the ages were recoded into two ranges the results had a moderate significant interaction. For the respondents aged 20 years or less price endings remained similar (important for a low quality retailer to have a 99-price ending and for a high quality retailer price ending is not as important) however for the respondents aged 21 years and above the importance of price endings alters. For low quality retailers the importance of price endings does not appear important however for high quality retailers such as Ballantynes the 99-price ending appears important. This is contrasting to existing literature which suggests that 99-price endings communicate a low store quality image that is a less favourable impression towards the store (Schindler and Kibarian 2001). This could possibly be explained by several suggestions.

Like the possible explanation for H2a clarification could be that perhaps the older respondents are more value focused. There has been research which suggests that consumers use a 99-price ending as a cue for value (Naipaul and Parsa 2001, as discussed above) perhaps in relation to our study the older respondents are more value conscious. The sample of respondents was graduate students therefore not representative of the general public.

### **Limitations and Future Research**

The research carried out has several limitations to contemplate when examining the results. Firstly, a randomised convenience sample of undergraduate students was used therefore the sample could be improved in future research to reflect a wider audience. Future research could look at the extent that 99-price endings communicate 'value image' within the on-line retail setting. The sample could be made more generalisable to the general public so comparisons could be made between quality and value image. A limitation of this study was the lack of published scales for the price image and the quality image of the products, especially within an on-line setting therefore this research had to use three individual questions from Schindler and Kibarian, (2001) to measure each image. Future research could develop and empirically test scales for these important measures. This research adds to the increasingly growing research on price endings and quality perceptions of retail stores. It provides support on the way subjects respond to price as a way of articulating store quality image perceptions.

### **Managerial implications**

Findings appear to suggest that price endings have little differential influence for the higher quality retailers. For the perceived quality of the items in the store, 99 price endings seem have a more favourable quality image than the 00-price endings. Based on this research, it suggests that managers should probably use the 99-price endings regardless of the perceived quality of the retailers and that this communication strategy may bring benefits in the long run. Of course, this has to be examined in conjunction with other marketing objectives that may or may not be consistent with this pricing strategy.

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